Claims

1.   A management server device that instructs each of a plurality of application devices, which stores a same password therein, to update the password, each application device providing a service to a user who is authenticated using the password, the management server device comprising:

a first unit operable to have all the application devices attempt to update the password;

a second unit operable to judge whether each application device is capable of updating the password based on a result of the attempt by the application device; and

a third unit operable, if at least one of the application devices is not capable of updating the password, to have all the application devices keep the password non-updated.

2.   The management server device of Claim 1, further comprising:

a fourth unit operable to receive a password update request from a user device, wherein

the first unit has all the application devices attempt to update the password based on the password update request.

3.   The management server device of Claim 2, wherein

the first unit instructs all the application devices to update the password,

the second unit judges whether the password has been successfully updated by each application device, and

the third unit instructs, if any of the application devices

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has failed to update the password, the other application devices, which have successfully updated the password, to restore the password.

4.   The management server device of Claim 3, wherein
the fourth unit receives the password update request that includes the password and a new password, and
the first unit generates a password update instruction that includes the password and the new password, and transmits the password update instruction to each application device.

5.   The management server device of Claim 3, wherein
the second unit includes:
a response receiving subunit operable to receive a response that indicates an update success or an update failure from each application device; and
a determining subunit operable to determine, if the response indicates the update success, that the application device, from which the judging subunit receives the response, has successfully updated the password, and to determine, if the response indicates the update failure, that the application device has failed to update the password.

6.   The management server device of Claim 3, wherein
the second unit includes:
a timer subunit operable to count elapsed time;
an initializing subunit operable to reset the counted elapsed time to an initial value when the first unit transmits the password update instruction;
a waiting subunit operable to wait for the response to be

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transmitted from each application device, and receive the response if the response is transmitted;

a judging subunit operable to judge whether the counted elapsed time is more than a predetermined threshold value; and

a determining subunit operable, in the case where the counted elapsed time is equal to or smaller than the threshold value and the waiting subunit has received the response that indicates the update success, to determine that the application device, from which the waiting subunit has received the response, has successfully updated the password, and operable, in the other cases, to determine that the application device has failed to update the password.

7.   The management server device of Claim 2, wherein

the first unit instructs all the application devices to prepare to update the password,

the second unit judges whether each application device has already prepared to update the password, and

the third unit cancels, if at least one of the application devices has not prepared to update the password yet, the instruction to prepare to update the password for the other application devices which have already prepared to update the password.

8.   The management server device of Claim 7, wherein

the fourth unit receives the password update request that includes the password and a new password, and

the first unit generates a password update preparing instruction that includes the password and the new password, and transmits the password update preparing instruction to each

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application device.

9.	The management server device of Claim 7, wherein

the second unit includes:

a response receiving subunit operable to receive a response that indicates an update preparation completion or an update preparation incompletion from each application device; and

a determining subunit operable to determine, if the response indicates the update preparation completion, that the application device, from which the judging subunit receives the response, has already prepared to update the password, and to determine, if the response indicates the update preparation incompletion, that the application device has not prepared yet to update the password.

10.	The management server device of Claim 7, wherein

the second unit includes:

a timer subunit operable to count elapsed time;

an initializing subunit operable to reset the counted elapsed time to an initial value when the first unit transmits the password update preparing instruction;

a waiting subunit operable to wait for the response to be transmitted from each application device, and receive the response if the response is transmitted;

a judging subunit operable to judge whether the counted elapsed time is more than a predetermined threshold value; and

a determining subunit operable, in the case where the counted elapsed time is equal to or smaller than the threshold value and the waiting subunit has received the response that indicates the

update preparation completion, to determine that the application

device, from which the waiting subunit has received the response,

has already prepared to updated the password, and operable, in the

other cases, to determine that the application device has not prepared

5   yet to update the password.

11.   The management server device of Claim 2, further comprising

         a message transmitting unit operable to transmit a message,

indicating that the password should be restored, to the user device,

10   if the second unit judges in the negative concerning any of the

application devices.

12.   The management server device of Claim 2, further comprising

         a management storing unit operable to store information as

15   to whether each application device is currently being maintained,

wherein

         the first unit has all the application devices update the

password if no application device is currently being maintained.

20   13.   The management server device of Claim 12, wherein

         the first unit stops updating the password if any of the

application devices is currently being maintained, and

         the management server device further comprises

         a message transmitting unit operable to transmit a message,

25   indicating that the update of the password should be stopped, to

the user device.

14.   The management server device of Claim 2, wherein

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the application devices are connected to the management server

device via a first network, and

the user device is connected to the management server device

via a second network that is not connected to the first network.

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15. The management server device of Claim 14, wherein

the first network and the second network constitute an intranet .

16. The management server device of Claim 14, wherein

10 the management server device is connected to the application

devices via dedicated lines respectively,

the management server device transmits and receives information,

which is used for updating the password, to and from the application

devices via the dedicated lines, and

15 information used for providing the services is received and

transmitted via the first network and the second network.

17. The management server device of Claim 2, wherein

the application devices and the user device are connected to

20 the management server device via a network, and

the management server device further comprises:

a storing unit operable to store an association table in which

types of the applications and positions of the application devices

on the network are associated to each other on a one-to-one basis;

25 a receiving unit operable to receive type information

indicating an application type and procedure information indicating

details of a procedure;

an obtaining unit operable, using the association table, to

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obtain a position of an application device corresponding to the received type information; and ·

a transmitting unit operable to transmit the procedure information to the application device whose position is obtained
5   by the obtaining unit.

18.   The management server device of Claim 16, wherein
the network is the Internet.

10   19.   The management server device of Claim 1, wherein
a new password updated from the password is an initial password assigned to the user,

the first unit has all the application devices attempt to update the password to the initial password;
15   the second unit judges whether each application device is capable of updating the password to the initial password; and

if at least one of the application devices is not capable of updating the password to the initial password, the third unit has all the application devices keep the password non-updated.
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20.   An application device that provides a service to a user who is authenticated using a password, and updates the password based on an instruction from a management server device, the application device comprising:
25   an old password storing unit operable to store the password that is not updated;

an authentication password storing unit operable to store an authentication password used for authenticating the user;

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a receiving unit operable to receive a restoration instruction

for restoring the password from the management server device; and

a writing unit operable to read out the password from the old

password storing unit, and overwrite the authentication password

5   with the read-out password.

21.   The application device of Claim 20, wherein

the application device receives and transmits information

relating to the service from and to a user device via the management

10 server device.

22.   The application device of Claim 21, wherein

if currently being maintained, the application device notifies

the management server device that the application device is currently

15 being maintained.

23.   The application device of Claim 21, wherein

the application device is connected to the management server

device via a first network, and

20   the user device is connected to the management server device

via a second network that is not connected to the first network.

24.   The application device of Claim 23, wherein

the application device is connected to the management server

25 device via a dedicated line,

the application device transmits and receives information,

which is used for updating the password, to and from the management

server device via the dedicated line, and

the application device relays information used for providing the service between the user terminal and the management server device via the first network and the second network.

5   25.   The application device of Claim 21, wherein

the application device and the user device are connected to the management server device via the Internet.

26.   A password changing system that includes a user device, a
10   plurality of application devices each storing a password and providing a service to a user who is authenticated using the password, and a management server device instructing each of the application devices to update the password, wherein

the management server device comprises:
15   a first unit operable to have all the application devices attempt to update the password;

a second unit operable to judge whether each application device is capable of updating the password based on a result of the attempt by the application device; and
20   a third unit operable, if at least one of the application devices is not capable of updating the password, to have all the application devices to keep the password non-updated, and

each application device comprises:

an old password storing unit operable to store the password
25   that is not updated;

an authentication password storing unit operable to store an authentication password used for authenticating the user;

a receiving unit operable to receive a restoration instruction

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for restoring the password, which is not updated, from the management server device; and

a writing unit operable to read out the password, which is not updated, from the old password storing unit, and overwrite the authentication password with the read-out password.

27. The password changing system of Claim 26, wherein each application device receives and transmits information relating to the service from and to the user device via the management server device.

28. The password changing system of Claim 27, wherein the application device is connected to the management server device via a first network, and

the user device is connected to the management server device via a second network that is not connected to the first network.

29. The password changing system of Claim 28, wherein the first network and the second network constitute an intranet.

30. The password changing system of Claim 28, wherein the management server device is connected to the application devices via dedicated lines respectively,

the management server device transmits and receives information, which is used for updating the password, to and from the application devices via the dedicated lines, and

information used for providing the services is received and transmitted via the first network and the second network.

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31.   The password changing system of Claim 27, wherein

the application devices and the user device are connected to the management server device via a network, and

5   the management server device further comprises:

a storing unit operable to store an association table in which types of the applications and positions of the application devices on the network are associated to each other on a one-to-one basis;

a receiving unit operable to receive type information

10   indicating an application type and procedure information indicating details of a procedure;

an obtaining unit operable, using the association table, to obtain a position of an application device corresponding to the received type information; and

15   a transmitting unit operable to transmit the procedure information to the application device whose position is obtained by the obtaining unit.

32.   The password changing system of Claim 31, wherein

20   the network is the Internet.

33.   A management server control method for a management server device that instructs each of a plurality of application devices, which stores a same password therein, to update the password, each

25   application device providing a service to a user who is authenticated using the password, the management server control method comprising:

a first step of having all the application devices attempt to update the password;

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a second step of judging whether each application device is capable of updating the password based on a result of the attempt by the application device; and

a third step of having all the application devices keep the password non-updated if at least one of the application devices is not capable of updating the password.

34. A management server control program for a management server device that instructs each of a plurality of application devices, which stores a same password therein, to update the password, each application device providing a service to a user who is authenticated using the password, the management server control method comprising:

a first step of having all the application devices attempt to update the password;

a second step of judging whether each application device is capable of updating the password based on a result of the attempt by the application device; and

a third step of having all the application devices keep the password non-updated if at least one of the application devices is not capable of updating the password.

35. The management server control program of Claim 34, wherein the management server control program is recorded on a computer-readable program recording medium.